Online Testing

Technology Readiness Analysis

For

Clarendon School District 2

Overview of Clarendon School District 2

Clarendon School District 2 is located in the mideastern part of the state with the District Office located in Manning, SC. As of February 2016, the district is comprised of 6 schools, serving approximately 2,991students. Test scores for students in grades 3-8 in the district were below the state average in all areas, but above their peer districts in all areas in 2015 and leadership is working aggressively to take the appropriate measures to enhance the learning experience and increase student achievement rates in 2016.

Key Data Points

- Mr. John Tindal has served as Superintendent for 14 years
- District Poverty Level is 89%
- Teacher Retention Rate is 86%
- Breakdown of schools:
  - Manning Early Childhood Center, 16 years old, grades PK-1, 585 students
  - Manning Primary, 63 years old, grades 2-3, 474 students
  - Manning Elementary, 74 years old, grades 4-6, 626 students
  - Manning Junior High, 26 years old, grades 7-8, 465 students
  - Manning High, 33 years old, grades 9-12, 804 students
  - Phoenix Charter High, 70 years old, grades 9-12, 37 students

Participating District Personnel

Name of District Staff Member	Roles/Responsibilities
Tommy Godbold	Director of Technology
Preston Threatt	Director of Testing

Purpose of This Analysis

The purpose of this analysis is to provide an independent evaluation of the ability of Clarendon School District 2 to organize and conduct online testing for their students in grades 3-8 starting in the spring of 2017. Federal online testing guidelines will take effect in 2018 but South Carolina's legislature has implemented plans for all districts to begin formal online testing in March of 2017 for Math and ELA classes inclusive of all students in grades 3-8. This proactive technology analysis will benchmark a district and their schools in several key areas and provide a technology readiness score that will ultimately lead to a roadmap of detailed tasks and deliverables that are necessary to improve any of the deficient areas.

The three specific objectives of this analysis are:

1. Analyze the strengths and weaknesses of the school district and quantify their ability to carry out the online testing activities in 2017 and beyond while documenting any major gaps in "readiness."

2. Work with the district to identify recommendations to bridge the gap between where the district is and where they need to be in terms of technology readiness to carry out these activities.

3. Collaborate with the district to put in place a blueprint for completing any tasks (or procurements) necessary to achieve "technology readiness."

Analysis Background

During the 2015 budget planning period, Superintendent Molly Spearman championed the General Assembly to consider the request of reserving a portion of the K-12 Technology Initiative funds for the purpose of providing technology technical assistance to rural and less affluent districts of need. After funds were allocated through the Proviso, the Superintendent's office called together a small Advisory Task Force to begin exploration of a plan of action to implement the initiative. The Task Force included South Carolina Department of Education (SCDE) staff, representation from rural school districts, legislative representation, and private sector.

The Proviso states:

"1.94. (SCDE: Technology Technical Assistance) Of the funds appropriated for the K-12 Technology Initiative, the department is authorized to withhold up to $350,000 in order to provide technology technical assistance to school districts."

The purpose and spirit of the Proviso is for the SCDE to provide technology-consulting services ("technology technical assistance") to school districts that would otherwise struggle in securing such services and resources. In particular, consulting services would initially focus on evaluating the state of technology, in participating districts, as it relates to readiness for standardized, online assessments beginning in 2017 and the capacities to offer quality computing based instruction, including Wi-Fi availability for support of instruction.

Proposed District Participants:

While there are a substantial number of rural-based districts in the South Carolina public school system, funds allocated for this year's initiative may not be adequate to offer high quality and much needed external, independent consulting services to all districts of need. Therefore, it is recommended that initial focus be placed on the plaintiff districts involved in the lawsuit between districts and the state (Abbeville vs. South Carolina.) and any other rural districts identified by the State Superintendent's office. As time and funding are available, other rural districts may be included. There were initially at least 30 districts involved in the state suit and about 9 remained by the end of the suit. All of the original Abbeville Law Suit districts have been given the opportunity to participate in the Online Testing Technology Readiness Analysis.

Proposed Consulting Resources/Partners:

The South Carolina Department of Education did not have adequate staffing to fully offer technology consulting services of this magnitude. Therefore, it was suggested that SCDE seek and secure external, independent contracted services to facilitate this initiative. The state interviewed several industry-consulting resources and opted to leverage a lead consultant who helped the state with the analysis and writing of the Educational Technology Plan for years 2014-2017. Robert Cardelli was contacted in late 2015 and the consultant team was finalized and officially began work the second week of November 2015.

Initial Outcomes:

As a result of the initiative, each participating district receives a personalized report detailing the consultants' findings and recommendations as to the district's technology readiness for state and other online assessments, 1:1 computing, and enhanced Internet connectivity (Wi-Fi) for the support of instruction in their schools. A blueprint outlining specific steps the district and their schools need to focus on is presented to the district's superintendent as part of the final report.

Evolution of Online Testing Requirements

No Child Left Behind legislation required states to measure students' progress in reading and mathematics annually in grades 3-8 and at least once in grades 10-12 by 2005-2006. The *Every Student Succeeds Act* (ESSA) maintains the requirement that each state implement "a set of high quality student academic assessments in mathematics, reading or language arts, and science" (114th Congress, 2015, p. S.1177-24) among its provisions. Further, mathematics and reading or language arts assessments will be administered in each of grades 3-8, and at least once in grades 9-12.

Beginning in the 2014-2015 school year, learners faced a new testing challenge in that their assessments of learning will be via online testing of the Common Core standards. Assessments are being developed by organizations such as PARCC, DRC, ACT and SBAC. Tests may take learners from 8-10 hours to complete and must be integrated into the school's daily and weekly calendar of events to complete the necessary activities. (Doorey, 2014; Gewertz, 2013). Online testing has posed concerns about required technology, sufficient bandwidth, computerized test security, learners' technology skills, and new forms of test anxiety.

States Must Become Familiar with Updated Legal Policies for Computerized Testing

Computerized testing raises new issues that require updating of test security laws and policies, as policies written for standardized testing administered via paper-and-pencil are no longer sufficient. ACT has a highly relevant report in this regard: The End of Erasures: Updating Test Security Laws and Policies for Computerized Testing by Michelle Croft (2014).

Croft (2014) outlined many concerns, noting that computerized testing does not eliminate cheating and test piracy. Such practices just take on different forms. Unique risks include such things as educators logging in to tests to view questions or change student responses, computer hacking, keystroke logging, printing, emailing, or storing test information in a computer outside the test delivery system. There is a greater risk of students accessing the Internet and other programs during testing. There is great concern about students using their own devices for testing and who has administrative privileges. Technology staff and teachers need to consider how testing workstations need to be positioned and secured so that students can't see what's on the monitors of others.

Croft (2014) recommended that states update their state statutes and regulations to reflect the shift to computer-administered assessments, concentrate efforts on controlling test access, and ensure that there is a single test security section within the updated manual that contains answers for any question that a test administrator has about test security. For example, policies should consider how student login information is secured. There should be rules on how tests are reactivated if disrupted. Additionally, these rules should emphasize having more than one proctor aid in the reactivation, and most importantly, proctors should maintain a log of all reactivations to provide documentation in the event of an investigation. Likewise, the technology should be secure and the testing window should be as short as possible to reduce the likelihood that items are compromised. Finally, states should implement steps to actively monitor test access issues through data reports to determine if there have been excessive logins or logins at times when testing should not occur (e.g., on the weekends), and have clear policies in place detailing how violations will be handled.

The test security section should also include an itemized list of what materials are secure (e.g., work folders, student authorization tickets with IDs and passwords, session rosters, scratch paper, reference sheets). "Information about who can access the test should be clearly articulated across the school and communicated to all proctors on the day of testing. In addition, there should be information on how to report test security concerns and possible violations, which can be applicable regardless of the testing format" (Croft, 2014, p. 4).

It is vital for states to adequately prepare districts and schools for the evolving testing requirements and to proactively ensure educators and students are familiar with any new policies regarding computerized test administration, including what they, test proctors, and students may and may not do. Having these policies and procedures in place is critical to the success of the testing process and the legal implications for violating any of these policies are potentially severe. Advance planning and communication is required to minimize the risks associated with testing. Any technological failures in the administration of the tests could spark an outcry to invalidate the results; especially considering that high-stakes test scores are factored into school grades, teacher salaries, and federal assistance to the state. The stakes are too high!

Changes in E-Rate Rules Will Affect Funding for Districts

The federal E-Rate Program started redirecting funding support FY 2015 (7/1/2015-6/30/2016) to focus on high speed broadband connectivity and Wi-Fi to tackle the digital divide concern. This included no longer providing funding or reducing funding support for outdated, legacy, and non-broadband related services such as…Page 12 ref: https://apps.fcc.gov/edocs_public/attachmatch/DA-14-1556A1.pdf ***FCC Order 2015, 2016:http://www.usac.org/_res/documents/sl/pdf/ESL_archive/EligibleServicesList-2016.pdf

Page 2 summary reads as follows:

"The E-rate program: (1) restructured the former Priority One and Priority Two categories into Category One and Category Two; (2) eliminated Category One (former Priority One) support for outdated, legacy, and other non-broadband services including web hosting, email, and paging; (3) adopted a phase out of support for Category One voice services; and (4) limited Category Two support to the internal connections needed to enable high-speed broadband connectivity within schools and libraries, specifically LAN/WLAN (local area networks/wireless local area networks)-focused components (broadband internal connections components), basic maintenance of eligible broadband internal connections components, and managed internal broadband services."

Services and Components No Longer Eligible for Support (Effective Funding Year 2015)

Category Two (Priority One)	Category Two (Priority Two)
Services and telephone components that were listed as eligible in the former Priority One category: • 900/976 call blocking • Custom calling services • Direct inward dialing • Directory assistance charges • Email • Inside wire maintenance plans • Paging • Text messaging • Voice mail • Web hosting	Components included in these former Priority Two entries: • Circuit Cards/Components • Data Protection (all except for firewall and uninterruptible power supply/battery back-up) • Interfaces, Gateways, Antennas (other than as specified in this Order) • Servers (other than servers necessary for caching) • Software (other than the software that supports eligible broadband internal connections) • Storage Devices • Telephone Components • Video Components • Voice/video IP components (that had been listed in the Data Distribution entry)

Many districts have relied on this funding support since the start of the E-Rate program 18-years ago. Some districts rely on this funding reimbursement to purchase additional technology/services. Others used this to pay for operational (staff, etc) expenses.

Eligible voice services are subject to an annual 20 percentage point phase down of E-rate support beginning in funding year 2015, as described in the *E-rate Modernization Order*. The reduced discount rate for voice services will apply to all applicants and all costs for the provision of telephone services and circuit capacity dedicated to providing voice services.

South Carolina's Testing Requirements

The South Carolina College- and Career- READY Assessments (SC READY) are statewide assessments in English language arts (ELA)* and mathematics that will meet all of the requirements of Acts 155 and 200, the Elementary and Secondary Education Act (ESEA) , the Individuals with Disabilities Education Improvement Act (IDEA), and the Assessments Peer Review guidance.

All students in grades 3–8 are required to take the SC READY except those who qualify for the South Carolina National Center and State Collaborative (SC-NCSC).

SC READY Assessments are not timed, and both computer-based and paper-based testing will be available. Data Recognition Corporation (DRC) is the contractor.

*** The ELA test will be a two-day test: Session 1 (Writing) and Session 2 (Reading) for all grades.**

Estimated Times for the SC READY Assessment*

Grades	ELA Session 1	ELA Session 2	Mathematics
3-8	2.5 hours	2.5 hours	2 hours

*The SC READY assessments are not timed. The Office of Assessment is providing estimated times to assist with classroom scheduling. Since there are no previous testing times to serve as a guide for SC READY, these estimates represent the Office of Assessment's best approximations. "Start" and "Stop" times will be collected this year so that more accurate estimated times may be provided in the future. Please note that SC READY includes some new item types designed to measure a more demanding set of standards. As a result, it is anticipated that in the first year of SC READY, students may require longer testing times than in previous years.

Links:

http://ed.sc.gov/tests/middle/sc-ready/sample-items/
http://ed.sc.gov/tests/middle/sc-ready/
http://ed.sc.gov/tests/middle/adoption-list-of-formative-assessments/
http://ed.sc.gov/scdoe/assets/File/tests/assessment-information/test-dates/SCREADYDates15-16(1).pdf
http://ed.sc.gov/tests/elementary/general-information/

Overview of Technology Readiness Analysis Team

A team of independent consultants has been hired by the State of South Carolina to conduct all aspects of this assessment. The objectivity that outside resources bring to the table has helped reduce the perception that "big brother" is searching for negative data points on a district's leadership team. The use of third party resources has helped foster open and honest dialogue and allowed the district staff and consultants to collaborate in all aspects of the process. The team is comprised of the following individuals:

- **Rob Cardelli**

  - Project Manager overseeing all facets of the analysis
  - More than 20 years of education and government consulting expertise
  - Personally worked with over 100 education customers including helping the Department of Education in South Carolina gather requirements and write the State's Educational Technology Plan for years 2014-2017

- **Brenda Bryant**

  - Local school teacher in Richland 2 school district
  - Focusing much of her attention on the readiness of students and teachers along with professional development concerns

- **Bob Jones**

  - Local I/T and Management Consultant with over 30 years of experience
  - Focusing much of his efforts on the infrastructure, hardware, security and funding concerns
  - Expert in data analytics and reporting

- **Heather Sutton**

  - Local I/T consultant currently residing in the Orangeburg 4 district
  - Focusing much of her effort on facilities, staffing levels, strategic planning and testing policy readiness levels
  - Expert in data analytics and reporting

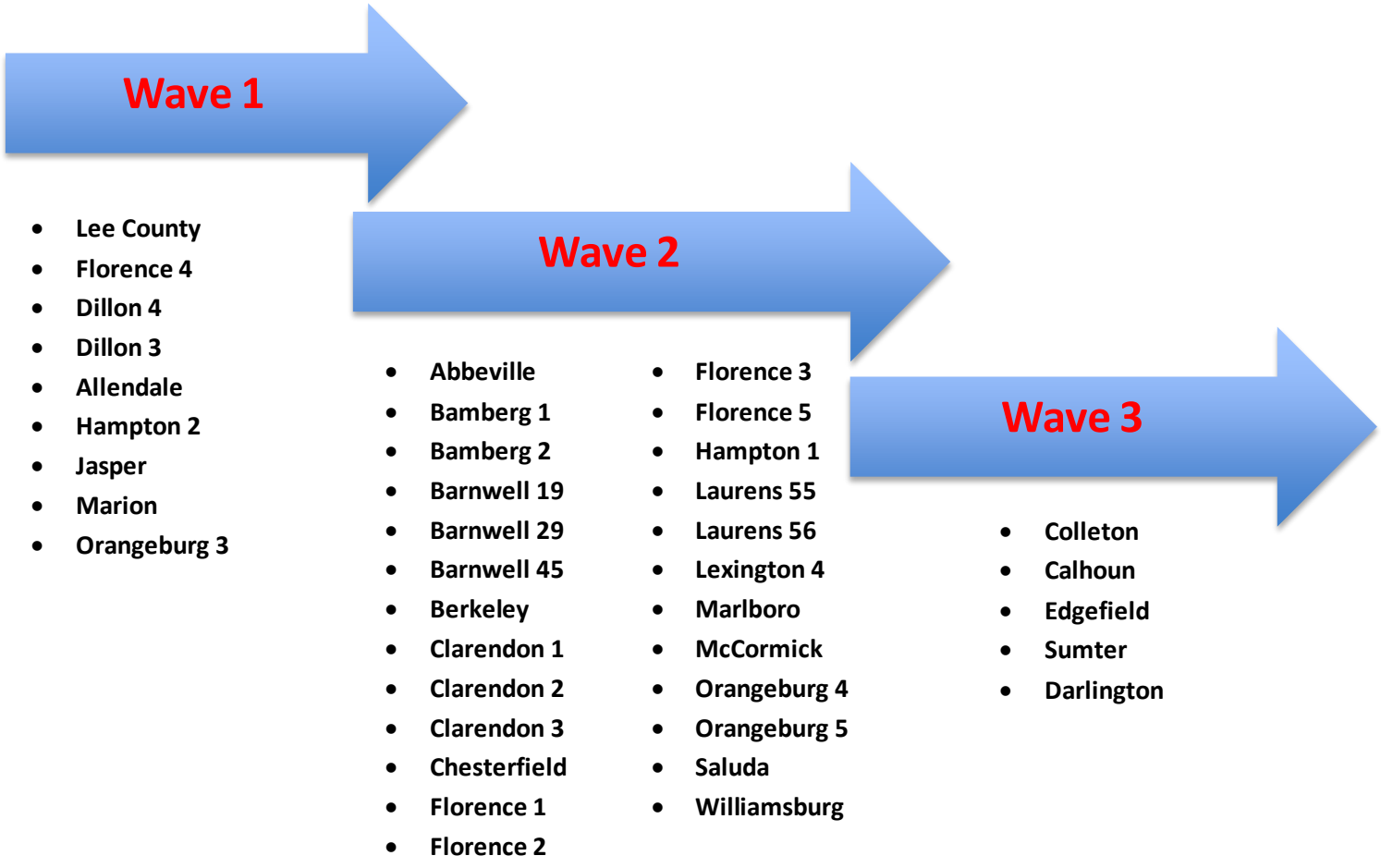
Participating Districts

The school districts that the state has identified as potential candidates for these optional readiness analysis studies have been prioritized into the following three categories:

- **Wave 1-** Includes the nine school districts that were still involved with the Abbeville Lawsuit at the time of the verdict

- **Wave 2-** Complete list of all districts participating in the Abbeville Lawsuit at any point in time over the last 20 years

- **Wave 3-** Other districts categorized as impoverished

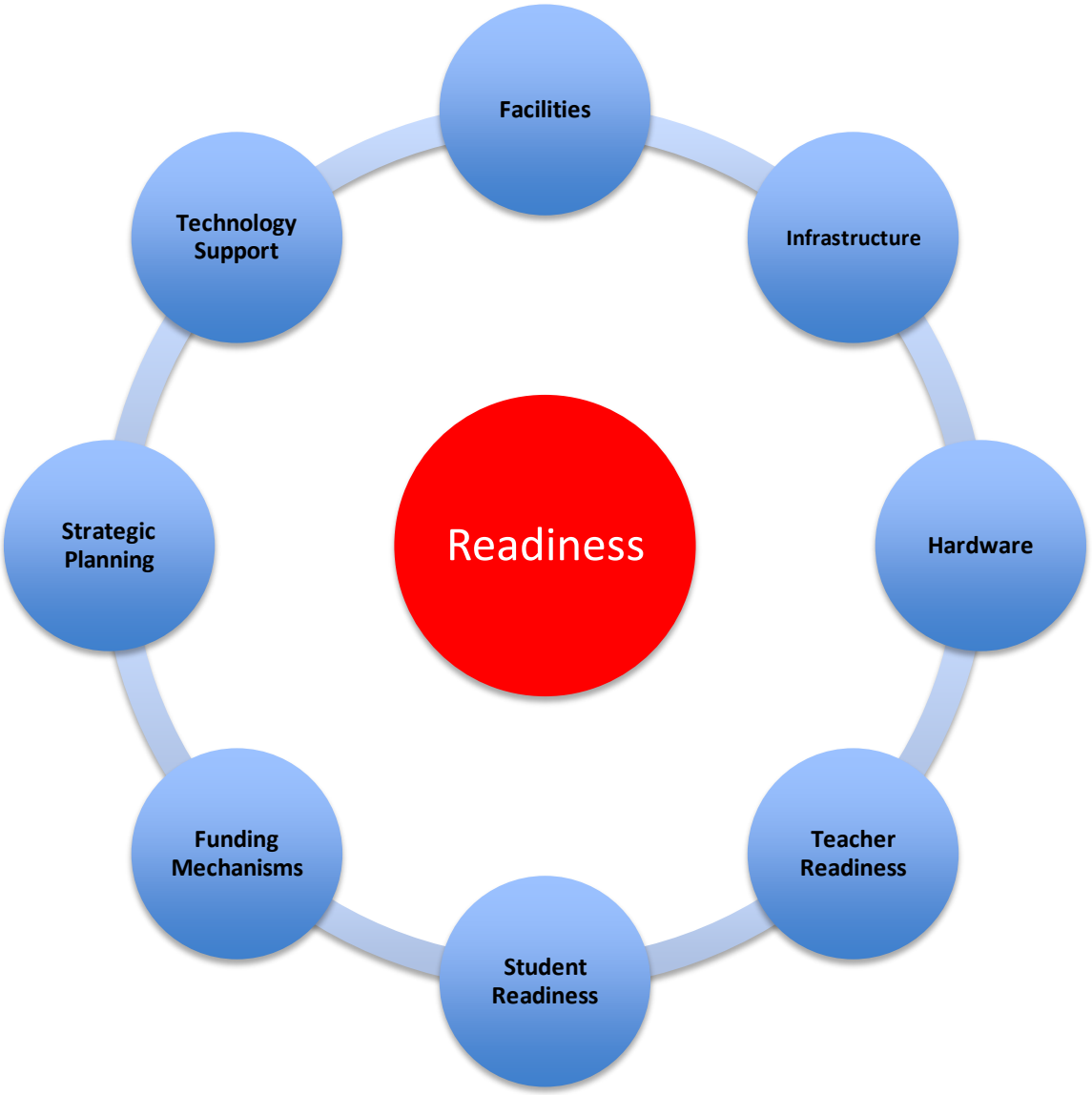


Analysis Methodology

The consultants worked with several of the Wave 1 districts to design and ultimately refine a methodology that allows for rapid data gathering with multiple collaboration opportunities for district staff to review the findings and edit the documentation to ensure the report accurately reflects the current state of the district. The consultants realize how busy the district staff are and created a methodology that is non-invasive in nature and flexible to allow the participants to work around their "day jobs" to reduce the impact on their daily operations.

Primary Areas of Focus

The technology analysis team identified several categories that are critical for a school district to achieve technical readiness for online testing. Within each category there are multiple variables that directly impact that category's degree of readiness. Accurately documenting these variables helps paint a picture of the overall level of readiness of the school district and also can be used to craft a blueprint for improving those deficient areas. The graphic shows the eight (8) categories currently being used to measure the degree of readiness. The following pages provide details surrounding the variables that are being analyzed during the analysis process.



Categories and Variables Being Measured

Note: These are generic categories and questions being asked are not specific to any one district. Each bullet point receives a score that is averaged for the overall section.

❑ Impact of Facilities

- How does the availability or lack of space impact the district's level of readiness?
- How does the age of the schools impact cabling, wireless, and ability to connect to the Internet?
- Does poor air conditioning or ventilation in server rooms, network closets, or computer rooms present a risk to the availability of the computers for testing?
- Are there situations where rodents chew through cables and bring down the district computer network? How long is the network down and what is the frequency of these events?
- Are there leaky ceilings, poor flooring, mold, or other environmental conditions that could impact the testing facility?

❑ Readiness of Infrastructure

- How does the amount of available network bandwidth impact the testing strategy?
- Are there any risks to testing due to the "up time" of the district (or school's) network?
- How many simultaneous testing machines can a district handle during any block of time?
- Does the district need additional wireless access points to conduct testing activities?
- Do the age and type of routers or switches impact the performance of the network and the ability of students to test in a given timeframe?
- Does the current wiring/cabling of the network impact the overall system performance? Is there anything that needs to be improved to enhance the testing experience?
- Is there any evidence that the security of the district's networks or computers could impact online testing?

❑ Readiness of Existing Hardware

- How does the number of available computers directly impact the district's ability to test?
- Is there a need to upgrade the available memory (RAM) in the testing computers? How much memory is currently in the testing machines and what (if any) performance issues have been witnessed?
- Are there any concerns over the size or quality of the testing monitors?
- Is there evidence that the different types of equipment being used for online testing directly impact the staff's ability to support the technology? Are there multiple products in use overcomplicating the support strategy and overall skills of the district staff?
- Do the current operating systems of the testing computers limit the ability to test? Are there any upgrades being planned and when will these take place?
- Are there adequate backup testing machines and/or accessories to ensure the necessary number of devices on the day of testing?
- Are there any procurements currently being contemplated and will they need to be amended to reflect changes to the testing strategy?

❑ Teacher Readiness

- Are the teachers adequately prepared for 2017 online testing requirements?
- Do the teachers require professional development training to educate them on how to better leverage technology?
- Do the teachers require assistance creating and conducting computer literacy classes for their students?
- Does the district have funding to offer computer literacy?
- What is the turnover rate of the teachers? How does the turnover rate impact the district's testing strategy?
- How do the teachers interact with the district technology staff?
- Are teachers aware of testing policies and are they properly prepared to manage testing cycles?
- Do the teachers need assistance in preparing their students for computer literacy?
- Are there any other concerns related to a teacher's knowledge or ability to assist with online testing?

❑ Student Readiness

- How does the level of computer proficiency of the student's impact online testing? Are there any concerns that students are not properly prepared to take a test on a computer?
- Does the district offer kindergarten through second grade computer classes?
- Is there any proactive analysis to identify disadvantaged students in a classroom with little to no computer literacy? What, if anything, is the district doing to help these potentially at risk students?
- Does the district allow students to check out computers to take home?
- How does a district manage situations where two different teachers leverage technology differently? Is there any analysis into the student's technology proficiency between these two scenarios?
- Does the district offer practice tests to allow the students to get familiar with the testing process and what is expected of them?
- Are students aware of testing policies and the implications?
- Is there any evidence from previous online testing cycles that students need assistance in specific areas? Examples might include: typing skills, knowledge of scrolling or potentially how to properly use a mouse.

❑ Technology Support

- How many resources are available at the district level and what are their roles and responsibilities?
- What are the main skills of the staff? Are there any skills missing in the support model?
- What functions are outsourced?
- What kind of help desk system is in place and how many ticket items are open?
- How many job duties does the staff have to perform?
- Does the district staff have any assistance from within the school?
- What would the impact be on the school's ability to test if a key resource were to call in sick or resign during the testing window?
- Are there any concerns about the availability of technology staff to support the testing process?
- Are policies and testing procedures documented and disseminated to all staff?
- Are students and their families made aware of the testing policies and schedule?
- Does the technology support team regularly communicate their needs to the administration and/or school board? What is the relationship between these parties?

❑ Funding Mechanisms

- Does the district leverage all available e-Rate funds?
- How has the district utilized e-Rate funds in the recent past?
- Does the district have experienced grant writers?
- How have technology related grants been utilized in the recent past?
- Are there any funds from e-Rate or grants that have NOT been utilized but could be leveraged to help improve the overall readiness of the district for online testing?
- Who writes the e-Rate documentation and grants? Internal or external resources?
- Are there other sources of funds the technology staff has access to and for what are they used?
- How does the district determine how the funds will be utilized?
- Are there any situations where money earmarked for technology is denied and utilized for non-technical district needs?
- What is the role of the technology staff in setting budgets and preparing for online testing needs?
- Is there a formal mechanism for cross training multiple district staff in the rules, regulations and nuances of applying for e-Rate, grants or other funding sources?
- How are the district's funds allocated for student computer literacy being spent?

❑ Strategic Planning

- Does the district have an up to date district wide strategic plan?
- Does the district have an up to date district technology strategic plan?
- Are the district's strategic plan and the TECHNOLOGY strategic plan properly aligned?
- What is the level of involvement of the local school board?
- Who is involved in strategic planning?
    - *Superintendent?*
    - *Teachers/Faculty?*
    - *I/T staff?*
    - *Local Vendors?*
- How does the district proactively plan for new technology acquisitions?
- How do the schools leverage district I/T staff?
- How are students or teachers leveraged?
- How are local technology vendors utilized?
- What is the level of involvement with the local "consortium"?
- How does the technology staff procure hardware or services?
- Is there a risk of "single point of failure" with the district staff member?
- Does the district need specific training in proper strategic planning?
- What assistance is required from the state?

Overview of Readiness Rating Scale

To evaluate the readiness of a district in multiple areas the team created a rating scale to objectively measure how effectively (or ineffectively) a particular area rates compared to other districts. After each area has been given a score the analysis team compiles the statistics and averages them to derive a final readiness score for the district. To simplify the process the consultants used a scale of 1-5 that increases in increments of half a point. The following scale will be used to track future readiness decisions:

Rating	Description
1	The district is unable to prove they can successfully complete online testing in 2017.
2	The district could feasibly conduct testing in 2017 but there are multiple areas that need to be improved to make this happen and if they are not completed testing will more than likely be unsuccessful.
3	The district will be able to meet the 2017 Online Testing requirements. The district will not be able to handle additional subjects or grade levels without significant improvement in multiple areas.
4	The district will be able to meet the 2017 Online Testing requirements and they can meet a few extra subjects or grades but not all future needs.
5	The district is prepared for 2017 and beyond. They do not have any measurable risks associated with Online Testing for 2017 or beyond. They can handle online testing for all grades and subjects.

Summary of Findings for Clarendon School District 2

Overall Readiness Score	2.3

Impact of Facilities

Readiness Score	2.2

Area of Focus	Observations	Recommendations
Availability of Testing Labs	• District currently has only 1 computer lab per school. • There is space available at all schools for additional labs. • District will not be able to complete on line testing within SCDE 14 school day testing window.	• District will need 9 additional labs and 6 computer carts in order to complete testing within SCDE testing window. • Additional computer carts could be used instead of additional physical labs being created. • Additional labs and carts will be required as the number of courses tested online increases. • CATE students should not be displaced by the online testing of other students. CATE labs should not be used for testing.
Age of Buildings and Impact on Cabling and Wireless Connectivity	• Manning Early Childhood Center is 16 years old. • Manning Junior High School is 26 years old. • Manning High School is 33 years old. • Manning Primary School is 63 years old. • Manning Elementary School is 74 years old. • Phoenix Charter High is 70 years old. • Type of construction and design of older buildings can make new cabling difficult and expensive. • 80% of schools are not current infrastructure technology and are not wired with cat6 cable.	• All schools that are not wired with Cat6 cable will need to be rewired in order to maximize upgraded switches and increased bandwidth to the schools.

Environmental Concerns (i.e. mold, air conditioning and ventilation concerns, excessive noise)	• Switch in one school is in danger of overheating due to lack of proper ventilation. • All schools, except Manning Early Childhood Center, have issues with the number of available electrical outlets in the classrooms.	• Adequate ventilation in all data centers is essential to ensure online testing can be conducted without interruptions. HVAC requirements should be determined for all data closets and additional air condition be procured as needed.
Condition of desks and chairs where students will be testing	• Manning Elementary desks and chairs are extremely aged and need to be replaced. • Furniture at all other schools is in need of a refresh.	• Verify all labs have comfortable chairs and stable desks. • Ensure all desks and chairs are appropriate for grades using the lab.
Other Concerns	• Phoenix Charter High School has been broken into and severely vandalized. Little theft, but extreme damage to network infrastructure and electrical power supply.	• Conduct a third party external facilities review and make recommendations to the board for new facilities.

Infrastructure

Readiness Score	2.4

Area of Focus	Observations	Recommendations
Available Bandwidth to the district	• District currently has 1 GB incoming bandwidth. • Minimal performance testing has done at the schools.	• Formal analysis of the network's configuration to determine if the available bandwidth is able to meet the needs of the district during online testing activities. Contracting with 3rd party experts may be necessary to ensure the routers, switches, access points and cabling are properly integrated and successfully maximizing the available bandwidth. Corrective action should be taken to further "tune" the networks and support components. There are specialized tools available to help assess a network's efficiency and it may be necessary to leverage a 3rd party to help justify purchasing additional incoming bandwidth to rectify the performance challenges.
Stability of Networks Within The Schools	• Director of Technology inherited a bare bones network. • One domain server for entire district has been upgraded to one server for each school. • Charter school currently has no server on site.	• No recommendations in this area.
Available Bandwidth to the Schools	• Switches in schools are outdated and cannot support the 1GB incoming bandwidth from the district. • All schools have less than 100 mbps incoming bandwidth from the district office.	• See recommendations for "Available Bandwidth to the District". • Bandwidth upgrade for all schools should be considered. • New switches throughout the district will be required to achieve increased bandwidth.

Cabling Challenges	• Need additional wiring to support wireless access points. • 80% of schools are not current and not wired with cat6 cable. • Currently all classrooms in the District have a network drop.	• All schools that are not wired with Cat6 cable will need to be rewired in order to maximize upgraded switches and to support upgraded wireless access points.
Wireless Networks • Routers • Access Points • Bandwidth • Switches	• Although schools are 1:1 WAP to classroom the access points are not designed for "commercial" use. • All wireless access points need to be replaced for improved performance and increased security. • New switches are needed to add additional wireless points and to replace extremely old switches currently in use.	• All wireless access points need to be replaced for improved performance, stability and increased security. • New switches are needed to add additional wireless points and to replace extremely old switches currently in use

Hardware

Readiness Score	2.6

Area of Focus	Observations	Recommendations
Number of Computers Available for Testing	• Apple computers and tablets will be returned in December 2017 and will need to be replaced. • Some computers currently in labs are 5 to 8 years old, past useful life and starting to fail.	• District will need approximately 450 additional computers (desktops and laptops) in order to complete testing within SCDE testing window. • Additional computer carts will be required for laptop computers. • Additional computers will be required as the number of courses tested online increases. • All computers over 5 years old should be evaluated and replaced as needed.
Age and ability to upgrade computers	• District has computers 7 to 9 years old that are past useful life and cannot be upgraded. • Many computers are damaged and others are beginning to fail as they age.	• All computers over 5 years old should be evaluated and replaced as needed.
Available RAM (Memory) in testing computers	• Approximately 80% of testing computers have 4 GB RAM. • Approximately 20% of testing computers only have 2 GB RAM.	• 4 GB RAM should be considered the minimum for online testing. • Ideally new computers would be equipped with 8 GB RAM.
Disaster Recovery Solution	• Technology Director went to a cloud based backup solution as one of the first things he did after coming into the district. • District is one a few districts utilizing a cloud based solution. • There is a significant annual cost required to maintain a cloud backup solution. • District has utilized almost all available backup storage space and will need to purchase additional storage for backups.	• There is a significant annual cost required to maintain a cloud backup solution. A funding strategy needs to be in place. • Consulting team is recommending the state offers a cloud backup and disaster recovery solution to district.

Adequate replacement hardware	• District struggles to have adequate computers available for current needs. • District does not have any backup computer systems, switches, routers or servers.	• Adequate backup systems and spare laptop batteries are essential to ensuring online testing is available to all students. • Replacement and backup computers as well as switches and other network hardware need to be addressed when new hardware is purchased.
Support and Replacement Strategy	• Technology Director tries to replace computers every three years but available funding prevents Director from achieving this goal. • The refresh cycle has been 5-7 years on occasion.	• Best practice dictates computers are replace every 3-5 years. • An ongoing replacement and funding strategy needs to be developed.

Teacher Readiness

Readiness Score	2.5

Area of Focus	Observations	Recommendations
Technical Proficiency of Staff	• Younger teachers usually try to fully utilize available technology. • More senior teachers do not embrace technology. • District employees other than teachers (transportation, maintenance) avoid computers and technology.	• Director of Technology has made maintenance shop wireless to encourage district employees in that area to make use of district technology and applications. • District would greatly benefit from a full time, dedicated Technology Coach to train teachers on using Instructional Technology in the classroom.
Turnover of Teachers	• District has an 86% teacher retention rate. • Teacher turnover requires additional technology training and professional development.	• Additional professional development will be required for new teachers coming into the district. A formal program for training new teachers on the district's technology should be developed.
Level of Technical Preparedness	• Teachers are still in the process of learning Apple operating system and applications. • Teachers will be challenged again in late 2017 to learn Microsoft operating system and applications.	• A formal curriculum for technology training should be developed to insure teachers are kept current on technology used by the district.
Availability to prepare for testing	• MAP testing revealed teachers inability to manage the online testing environment.	• Ensure professional development efforts are addressing the added complexity of online testing.
Other Concerns		

Student Readiness

Readiness Score	2.2

Area of Focus		
Availability of Computer/Typing Classes for K-2	• Students have regular access to computer labs. • Currently there are no formal K-2 keyboarding classes. • Will start formal training in 4th grade beginning in the 2016-2017 school year.	• Keyboarding lessons need to start prior to the 3rd grade. Formal keyboarding activities are necessary to ensure 3rd graders are prepared for the testing requirements. • District should consider utilizing the VirtualSC Elementary Keyboarding Project free curriculum.
Level of Poverty/Home Exposure to Computers	• 89% poverty level. • Very little exposure to computers in the home. • Concern with how district computers are used at homes as there is minimal parental supervision provided.	• This increases the needs for formal computer literacy classes in earlier grades continuing through elementary and middle school. • A survey should be taking to determine actual availability of computers in the student's homes to further develop computer literacy classes.
English as a Second Language Concerns	• 4.8% ESL population. • WiDA test scores decreased when testing moved from paper to on line testing. This has been reported state wide.	• The consultants recommend the district staff work closely with the schools to formally give the ESOL students an opportunity to take a practice test to ensure they are adequately prepared for the on line testing activities. Simulated testing will help identify any potential concerns in a proactive manner. • Practice tests for ESL students should include use of translation dictionaries.
Availability of Sample Tests	• On line sample tests are available for Work Keys, ACT and AP.	• DRC offers free sample tests that could be used to familiarize students with the online testing format • This is critical for 3rd grade and ESL students to ensure

		their successfully testing online.

Funding Mechanisms

Readiness Score	2.1

Area of Focus	Observations	Recommendations
Maximizing e-Rate	• Currently maximizing e-Rate but missed the opportunity to receive approximately $57,000 in funding for the previous two years.	• Ensure the district's strategy for utilizing current and future e-Rate funds are documented in the strategic plan. • District should begin now to develop a plan for compensating for loss of e-Rate funds in some areas.
Ability to successfully manage the grant writing process.	• District currently has employed a proficient grant writer that has successfully obtained numerous grants for the district.	• District needs resources for determining which grants are available to maximize grant funding. • The district should look to collaborate with neighboring districts in this area.
Multiple resources knowledgeable in e-Rate and Grant Writing	• Technology Director is the only person with experience applying for e-Rate funding.	• There should be multiple resources in the district with a general understanding of e-Rate funding. • A 3rd party contractor should be identified as a potential source of knowledge in case the Director of Technology leaves the district or falls ill. A backup solution is needed.
Other Concerns		

Strategic Planning

Readiness Score	2.2

Area of Focus	Observations	Recommendations
Technical Staff Collaborates with Administrative Staff to Determine Technology Needs	• Technology Director does not make presentations to board. • Technology decisions are sometimes made without input of Technology Director.	• Provide, more visibly, the needs and successes of the technical support staff to the school board. Best practice dictates that the school board is regularly updated on the technology usage and needs of the technology staff.
Thoughtful analysis into how funds will be spent	• Purchase decisions are sometimes made without input from Technology Director.	• It's very important that the technology staff have a methodology for educating administrative staff on technology needs and recommendations.
Teachers needs are considered top priority	• Until recently classroom technology was antiquated and not useful to the teachers. The Apple grant has made new devices available to teachers but these devices will be going away in late 2017 and will need to be replaced. • Technology Director has replaced and upgraded classroom devices as funds have become available. • Non-Apple devices in the classrooms are 8-10 years old.	• Continue to develop first line classroom technical support in each school. • Teachers should be surveyed to determine classroom technology needs. • Technology budget should include all technology needs of the classroom including bulbs for inactive white boards. • Teacher's classroom computers are starting to fail and need to be replaced.
The role of technology is agreed upon by all parties	• District's understanding of how technology works and what is required to support and maintain infrastructure and hardware is rapidly growing. • The existence of a dedicated Apple support team is a source of confusion for teachers and administration when seeking technology support.	• It's very important that the technology staff have a methodology for educating administrative staff on technology needs and recommendations. • Teachers and staff need to be educated on the role if the District Technology Staff and trained on using the District Help Desk system.

Proper amount of professional development	• Technology training for teachers is offered but not required. • Training opportunities are available for Technology Director but he is too critical to success of day to day activities.	• Ensure professional development efforts are addressing the added complexity of on-line testing both for teachers and technical support staff.
Implementation, Distribution and Enforcement of Testing Policies.	• District is meeting the state and federal requirements for properly executing online testing.	• No recommendations are needed in this area.

Readiness of Technical Staff to Support Online Testing

Readiness Score	2.1

Area of Focus	Observations	Recommendations
Number of support technical support staff	• District has 1 support person in addition to the Technology Director.	• Having additional resources inside the schools serve as the front line for help desk items might be needed. • District should consider a student internship program to provide desktop support.
Technical skills and proficiency of support staff	• Director of Technology has a Computer Science degree. • Computer technician has no formal training. Technology Director is working to increase technician's proficiency with limited success.	• Opportunity for technical training and technical certifications should be made available to technical support staff. • An emphasis should be placed on identifying areas where the technician's proficiency needs to be improved and a training strategy developed. • A formal, current and up to date job description and evaluation process for the technician needs to be written to reflect the current technology in the district and the current support requirements.
Availability of staff to proactively engage with the teachers and administrative staff	• Technical support staff is continuously in a reactive, fire fighting mode leaving little time to be proactive. • Technology Director takes as much time as he can to engage with teachers and staff.	• Having additional resources inside the schools serve as the front line for help desk items might be needed. • District should consider a student internship program to provide desktop support.

Ability of staff to assist with professional development efforts	• Technical support staff is continuously in a reactive, fire fighting mode leaving little time to be assist with professional development.	• An instructional coach is needed at each school to provide "just-in-time" professional development and support to teachers. • Additional professional development resources (people, money, time) are easily quantifiable and should be made available to the Technology Department.
Risk of Single Point of Failure. If a key resource leaves will testing become at risk?	• District is at extreme risk of losing technology support if Technology Director is not available. • Technology Director works nights and weekends to ensure network is available and to provide support to administrative staff and School Board.	• Cross training of support staff should be continued to ensure support of technology in the district is maintained at all times. • Additional computer technician is currently needed to enable technology staff to properly support the District's technology and to provide backup to the Director of Technology. • The hours worked by the Technology Director need to be monitored to ensure "burn out" is not a possibility.

Additional Consultant Observations

Highlighted below are the most frequently cited strengths of the school district, which can be used as a foundation for creating a roadmap to address any areas of concern. The items in the table are rank-ordered according to the frequency with which they were mentioned in the interviews. Multiple points of engagement took place with a minimum of two analysis team members involved with every district.

Rank	Strengths	Common Themes
1	Willingness to improve	Everybody wants this to happen. A lot of people are ready for change. Everyone is tired of fighting fires and not having the ability to proactively address many of the things that need to be corrected.
2	Attitude / Enthusiasm	Extremely eager to make testing a success. Cooperative and positive attitude of management and staff. Excitement and positive attitude toward this project.
3	Work well together	Sense of collegiality - we work well together. We're small; we'll pull together to make this happen. Partnerships among schools, other districts and/or vendors. We will come together on this.
4	Dedication	Level of commitment. Very dedicated people, people who are willing to get the job done and get it done well. Hard workers who are willing to do whatever it takes to get the job done.

Commonly Cited Concerns

Listed below are the most frequently cited concerns about testing that were documented over the course of the analysis process.

Rank	Concern	Sample Answers
1	Budget	Concerns that the funds that will be necessary to procure additional infrastructure, hardware and/or professional development will be insufficient.
2	Schedule / timeline	Time it will take to plan, procure, implement, test and train staff is in adequate to prepare for Spring of 2017 given the ongoing workload of the district staff.
3	Staffing Levels and Workload	Inadequate staff to complete the workload to prepare for testing. The focus on assisting teachers and their classroom technology consumes the majority of the staff's time leaving little availability for additional tasks.
4	Lack of Professional Development	New or upgraded technology will require significant training. There are limited funds available for professional development and few resources available to conduct the training.
5	Disaster Recovery	Limited funds available for proper disaster recovery.

District's Inventory of Readiness Needs

Category	Specific Need	Detail Specific Need (As required)	Vendor	Quantity	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Facilities	Space/Testing Rooms							
	Air Conditioning Unit	AC Unit is need in one switch closet.	Samsung	3	$6,000.00		Government Assistance	ASAP
	Roof/Ceiling Repair							
	Desks	Computer Desk are old and need to be updated.	HON	250	$75,000.00		Government Assistance	ASAP
	Chairs	Computer Chairs are old and need to be updated.	HON	250	$75,000.00		Government Assistance	ASAP
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Quantity	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Infrastructure	Bandwidth							
	Routers							
	Switches	Need new swiches to take advantage of the GB of bandwidth.	HP/Cisco	93	$151,000.00	N/A	TBD	ASAP
	Access Points	Need updated AP's to control applications, LDAP authentication etc.	Meraki	242	$148,000.00	N/A	TBD	ASAP
	Cabling	In-House	Staff	N/A	N/A	N/A		
	Installation/Testing	In-House	Staff	N/A	N/A	N/A		
	Disaster Recovery	We have one already, but we need more data storage.	Barracuda	Extra Storage.	$15,000.00	N/A	TBD	ASAP
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Quantity	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Hardware	Laptops	Students 1-to-1	Dell	3,500	$2,450,000.00	700,000.00	TBD	ASAP
	Desktops	Labs needs to be updated.	Dell	600	$600,000.00		TBD	ASAP
	Memory							
	Operating System Upgrade							
	Monitors							
	Computer Carts (Cart Only)	Carts needed for student laptops.	Dell	90	$2,000.00		TBD	ASAP
	Extra Batteries	Need Battery Backups.	APC	10	$6,500.00		TBD	ASAP
	Installation/Testing							
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Quantity	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Teacher Readiness	Type of training needed by grade and by topic							
	Teacher's Knowledge of Online Testing Requirements including security							
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Quantity	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Student Readiness	Computer Literacy Curriculum	Virtual Typing K-5	SC State Department	Free				
	Computers needed for training							
	Practice Tests							
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Quantity	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Funding Mechanisms	Assistance/Training for Writing Grants	In-House Grant Writer	In-House					
	Assistance/Training to manage e-Rate							
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Quantity	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Strategic Planning	Consulting Assistance to educate staff in the strategic planning areas							
	Formal Training of Staff							
	Other							

Category	Specific Need	Detail Specific Need (As required)	Vendor	Quantity	Estimated Cost (One Time)	Estimated Recurring Cost	Potential Funding Source	Date Needed
Technical Support	Consulting Assistance to help in specific areas	To assist with detailed services.	Netsource/ANC		$15-20,000.00		E-Rate	ASAP
	Additional resources							
	Other							

Strategic Roadmap

This section will provide an overview of the specific action items the district should focus on to improve the readiness of each area discussed in this report. The Roadmap is broken down into measurable tasks and deliverables to

1-Month Plan

- **Xx**
- **Xx**
- **Xx**

3-Month Plan

- **Xx**
- **Xx**
- **Xx**

6-Month Plan

- **xx**
- **xx**
- **xx**

12-Month Plan

- **xx**
- **xx**
- **xx**

18-Month Plan

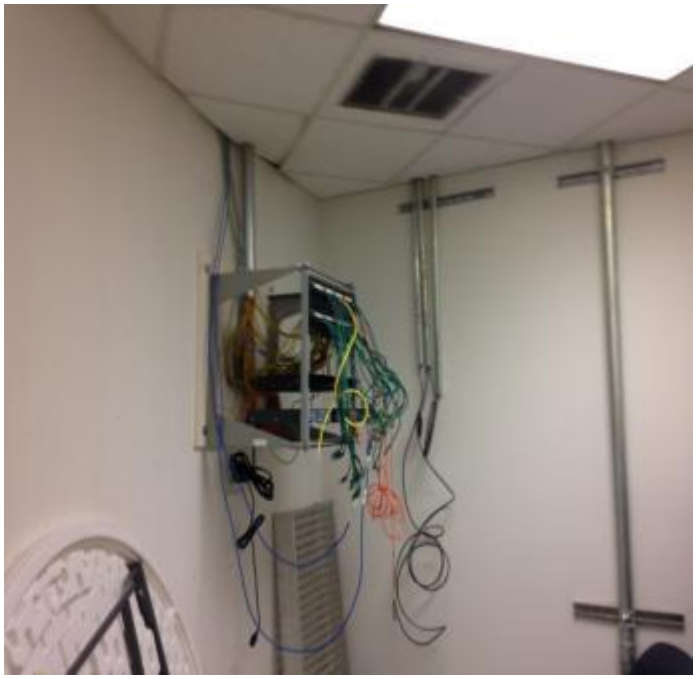
- **xx**
- **xx**

APPENDIX

Pictures of District

Fiber Cables Chewed by Squirrels

Older Labs Have Limited Number of Outlets



Switch Failed Due to Overheating Awaiting Replacement

Antiquated Network Switch